

# Notice of Allowability

Application No.

09/695,499

Examiner

Joon H. Hwang

Applicant(s)

COATES ET AL.

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to Caroline M. Fleming (Reg. No. 45,566) on 5/10/07.
2. ☒ The allowed claim(s) is/are 63,66-73 and 76-85 (renumbered as 1-19).
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) ☐ All b) ☐ Some\* c) ☐ None of the:
    1. ☐ Certified copies of the priority documents have been received.
    2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
    3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\* Certified copies not received: \_\_\_\_\_.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.  
**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
  5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
    - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
      - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date \_\_\_\_\_.
    - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_\_.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

## Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☒ Information Disclosure Statements (PTO/SB/08),  
Paper No./Mail Date 12/27/06
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application
6. ☐ Interview Summary (PTO-413),  
Paper No./Mail Date \_\_\_\_\_
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other \_\_\_\_\_

### **DETAILED ACTION**

1. The applicants amended claims 63, 73, and 83 and added a new claim 85 in the amendment filed on 3/12/07.

The pending claims are 63-85.

### **EXAMINER'S AMENDMENT**

2. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

3. Authorization for this examiner's amendment was given in a telephone interview with Caroline M. Fleming (Reg. No. 45,566) on 5/10/07.

4. The application has been amended as follows:

Rewrite claim 63 as follows:

"63. A network storage system comprising:

a storage port for accessing at a client, a virtual file system and a plurality of storage centers, the storage port, mounted at the client, translates a client local file system request to a network storage file system request including a file identifier identifying a file in a single file system;

a virtual file system ("VFS") storing file system information for the single file system, wherein the client of the network storage system accesses the VFS via the

storage port over a network to manage a plurality of files of the single file system, and wherein the client receives a generated storage resource locator ("SRL") from the VFS in response to the network storage file system request to access the file in the single file system;

the plurality of storage centers, located in geographically disparate locations from each other, the client and the VFS, and coupled to the client through a wide area, public access network, each of the storage centers storing a plurality of files for the single file system, wherein the client of the network storage system transmits the received SRL directly to one of the storage centers over the wide area, public access network, and downloads the file over the wide area, public access network, and wherein the SRL includes a public access network address for a storage center to access one of the storage centers over the wide area, public access network and a unique identifier associated with contents of the file to uniquely identify the file stored at the one of the storage centers; and

at least one additional storage port for accessing the virtual file system and the storage centers in an event of a failover condition of the storage port.”;

Cancel claim 64;

Cancel claim 65;

Rewrite claim 66 as follows:

"66. The network storage system of claim 63, wherein each storage center comprises:

a plurality of distributed object storage managers ("DOSMs") for receiving requests to access the storage center; and

a storage cluster, comprising a plurality of intelligent storage nodes, for storing files of the network storage system for serving access requests from the DOSMs, each intelligent storage node including a processor core and a plurality of storage devices.";

Rewrite claim 67 as follows:

"67. The network storage system of claim 66, further comprising a multi-cast protocol for maintaining file information at the DOSMs regarding files stored in an intelligent storage node.";

Rewrite claim 68 as follows:

"68. The network storage system of claim 66, wherein the DOSMs further comprise a data cache for caching at least a subset of files stored in an intelligent storage node.";

Rewrite claim 69 as follows:

"69. The network storage system of claim 68, further comprising a load balancing fabric for selecting a DOSM for an access request based on demand to

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access the storage center, and for caching data for files in high demand in the data cache of the DOSMs.”;

Rewrite claim 70 as follows:

“70. The network storage system of claim 63, further comprising a dynamic failover mechanism for servicing access requests from a disparate storage center in an event that a failure occurs in another one of the storage centers.”;

Rewrite claim 72 as follows:

“72. The network storage system of claim 63, wherein the file identifier includes a digital fingerprint derived from contents of the file.”;

Rewrite claim 73 as follows:

“73. A method for retrieving files in a network storage system, the method comprising:

storing file system information in a virtual file system ("VFS") for a single file system;

accessing, at a client, the virtual file system and a plurality of storage centers using a storage port, the storage port, mounted at the client, translates a client local file system request to a network storage file system request including a file identifier identifying a file in the single file system;

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providing at least one additional storage port for accessing the virtual file system and the storage centers in an event of a failover condition of the storage port;

receiving the network storage file system request from the client at the VFS to access the file in the network storage system;

generating at the VFS, in response to the network storage file system request from the client, a storage resource locator ("SRL");

storing a plurality of files for the single file system in the plurality of storage centers, the storage centers located in geographically disparate locations from each other, the client and the VFS;

coupling the storage centers to the client through a wide area, public access network;

transmitting, from the client directly to one of the storage centers, over a wide area, public access network, the SRL received from the VFS, wherein the SRL comprises a public access network address for a storage center to access the one of the storage centers over the wide area, public access network and comprises a unique file identifier associated with contents of the file to uniquely identify the file stored at the one of the storage centers; and

downloading, over the wide area, public access network, the file identified by the SRL from the storage center identified to the client.";

Cancel claim 74;

Cancel claim 75;

Rewrite claim 76 as follows:

“76. The method of claim 73, wherein downloading the file from the storage center comprises;

receiving a request for access to the storage center;

selecting one of a plurality of distributed object storage managers (DOSMs) to service the request; and

accessing an intelligent storage node from the DOSM selected to service the request, each intelligent storage node including a processor core and a plurality of storage devices.”;

Rewrite claim 77 as follows:

“77. The method of claim 76, further comprising:

issuing commands from a multi-cast protocol to maintain file information at the DOSMs requesting files stored in an intelligent storage node.”;

Rewrite claim 78 as follows:

“78. The method of claim 76, further comprising:

caching at least a subset of files stored in intelligent storage nodes at the DOSMs.”;

Rewrite claim 80 as follows:

"80. The method of claim 73, further comprising:  
servicing access requests from a disparate storage center in an event that a failure occurs in the storage center.";

Rewrite claim 82 as follows:

"82. The method of claim 73, wherein the file identifier includes a digital fingerprint derived from contents of the file.";

Rewrite claim 83 as follows:

"83. A network storage system comprising:  
a storage port for accessing at a client, a virtual file system and a storage center, the storage port, mounted at the client, translates a client local file system request to a network storage file system request including a file identifier identifying a file in a single file system;

a virtual file system ("VFS") storing file system information for the single file system, wherein the client of the network storage system accesses the VFS via the storage port over a network to manage a plurality of files of the single file system, and wherein the client receives a generated storage resource locator ("SRL") from the VFS in response to the network storage file system request to access the file in the single file system;

the storage center, located in geographically disparate locations from the client and the VFS, and coupled to the client through a wide area, public access network, the



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storage center storing a plurality of files for the single file system, wherein the client of the network storage system transmits the received SRL directly to the storage center over the wide area, public access network, and downloads the file over the wide area, public access network, and wherein the SRL includes a public access network address for the storage center to access the storage center over the wide area, public access network and a unique identifier associated with contents of the file to uniquely identify the file stored at the storage center; and

at least one additional storage port for accessing the virtual file system and the storage center in an event of a failover condition of the storage port.”; and

Rewrite claim 84 as follows:

“84. The network storage system of claim 83, wherein the file identifier includes a digital fingerprint derived from contents of the file.”.

***Allowable Subject Matter***

5. Claims 63, 66-73, and 76-85 are allowed.

Claims 63, 73, and 83 identify the distinct features, a storage port for accessing at a client, a virtual file system and a storage center, the storage port, mounted at the client, translates a client local file system request to a network storage file system request including a file identifier identifying a file in a single file system; the client receives a generated storage resource locator ("SRL") from the VFS in response to the network storage file system request to access the file in the single file system; the client

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of the network storage system transmits the received SRL directly to the storage center over the wide area, public access network, and downloads the file over the wide area, public access network, and wherein the SRL includes a public access network address for the storage center to access the storage center over the wide area, public access network and a unique identifier associated with contents of the file to uniquely identify the file stored at the storage center; and at least one additional storage port for accessing the virtual file system and the storage center in an event of a failover condition of the storage port, which are not taught or suggested by the prior art of records. The closest prior art, Inniss et al. (U.S. Patent No. 5,708,832) disclosing data processing networks having distributed storages and other resources, fails to suggest the claimed limitations as mentioned above in conjunction with other claimed elements. The above features in conjunction with all other limitations of the dependent and independent claims 63, 66-73, and 76-85 are hereby allowed.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Joon H. Hwang whose telephone number is 571-272-4036. The examiner can normally be reached on 9:30-6:00(M~F).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hosain T. Alam can be reached on 571-272-3978. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



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5/11/07